Claims

[c1]   What is claimed is:

1.A method for scaling a digital picture to generate a scaled picture comprising following steps:

(a)scaling a portion of the digital picture instead of the whole digital picture in a first direction;

(b)scaling part of the data produced in step (a) in a second direction; and

(c)repeating steps (a) and (b) to form the scaled picture.

[c2]   2.The method of claim 1 wherein steps (a) and (c) are performed by using an N-tap filter where N is an even integernatural number.

[c3]   3.The method of claim 1 wherein the first direction is a horizontal direction, and the second direction is a vertical direction.

[c4]   4.The method of claim 1 wherein the first direction is a vertical direction, and the second direction is a horizontal direction.

[c5]   5.The method of claim 1 further comprising step (d): initializing a buffer used for storing the data produced by step (a).

[c6]   6.The method of claim 5 wherein step (d) comprises mirroring part of the digital picture scaled in step (a).

[c7]   7.The method of claim 1 further comprising before scaling a last portion of the digital picture in the second direction, mirroring part of the digital picture scaled in step (a).

[c8]   8.The method of claim 1 wherein step (b) is performed by using all of the data produced in step (a).

[c9]   9.The method of claim 1 further comprising removing part of the digital picture before performing steps (a) and (b) when a scaling factor is 2^k wherein k is a natural number.

[c10]

[c11]   10.A method for scaling a digital picture comprising following steps:
(a)inputting a source picture to a source memory;
(b)providing a first buffer and a second buffer;
(c)determining scaling factors;
(d)generating initial data in the first buffer and second buffer;
(e)transferring a portion data of the digital picture from the source memory to the first buffer;

(f)using a filter to scale the data in the first buffer in a first direction and storing the scaled data in the second buffer;

(g)using the filter to scale the data in the second buffer in a second direction and storing the scaled data in a destination memory; and

(h)outputting a scaled picture from the destination memory.

[c12] 11.The method of claim 10 wherein the filter is an N-tap filter where N is an even integernatural number.

[c13] 12.The method of claim 10 wherein the first direction is a horizontal direction, and the second direction is a vertical direction.

[c14] 13.The method of claim 10 wherein the first direction is a vertical direction, and the second direction is a horizontal direction.

[c15] 14.The method of claim 10 wherein step (d) comprises mirroring part of the digital picture.

[c16] 15.The method of claim 10 further comprising before scaling a last portion of the digital picture in the second direction, mirroring part of the digital picture scaled in step (f).

[c17]   16. The method of claim 10 further wherein step (e) comprises removing part of the digital picture for down-scaling.